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I. INTRODUCTION

Generally Accepted Agricultural and Management Practices for Site Selection and Odor Control for New and Expanding Livestock Production Facilities will help determine the suitability of sites for livestock production facilities. These GAAMPs provide a planning process that can be used to properly plan new and expanding facilities and to increase the suitability of a particular site and enhance neighbor relations.

These GAAMPs for Site Selection and Odor Control for New and Expanding Livestock Production Facilities are written to provide uniform, statewide standards and acceptable management practices based on sound science.

FARM PLANNING AND SITE DEVELOPMENT

The GAAMPs for site selection and odor control for new and expanding livestock production facilities are intended to fulfill three primary objectives:

1) Environmental Protection
2) Social Considerations (neighbor relations)
3) Economic Viability

When all three of these objectives are met, the ability of a farm operation to achieve agricultural sustainability is greatly increased.

Farm planning involves three broad phases: Collection and analysis (understanding the problems and opportunities); decision making; and implementation. Collection and analysis includes: determining objectives, inventorying resources, and analyzing data. Decision support includes formulating alternatives, evaluating alternatives, and making decisions. The final step is implementation.

Producers should utilize recognized industry and university professionals in the evaluation of the economic viability and sustainability of constructing new or expanding existing livestock production facilities. This evaluation should be comprehensive enough to consider all aspects of livestock production including economics, resources, operation, waste management, and longevity.

The decision of where to site a livestock production facility can be based on several objectives including: preserving water quality, minimizing odor, working with existing land ownership constraints, future land development patterns, maximizing convenience for the operator, maintaining esthetic character, minimizing conflicts with adjacent land uses, and complying with other applicable local ordinances. The environmental objectives of these GAAMPs focus specifically on water quality protection and odor control, and how environmental and management factors affect the suitability of sites for livestock production. The suitability of a particular site for a livestock production

II. DEFINITIONS

AS REFERENCED IN THESE GAAMPs:

Adjacent - Any livestock production facility that is within 1,000 feet of a second livestock production facility and where the two facilities are under common ownership.

Animal Units - Animal units are defined as listed in (Table 1) of these GAAMPs.

Distances between a Livestock Production Facility and Non-Farm Residences - The distance from a livestock production facility and a residence is measured from the nearest point of the livestock production facility to the nearest point of the residence.

Expanding Livestock Production Facility - An addition to a facility to increase the holding capacity where animals will be confined at a site that presently has livestock production facilities contiguous to the construction site. A new or expanded manure storage structure built to accommodate an expansion in animal units within three years from construction of the manure storage will also be considered an expanding livestock production facility.

Livestock Farm Residence - A residence on land owned/rented by the livestock farm operation and those residences on farms affiliated by contract or agreement with the livestock production facility.

Livestock Production Facilities - Includes all facilities where farm animals as defined in the Right to Farm Act are confined with a capacity of 50 animal units or greater and/or the associated manure storage facilities. Sites such as loafing areas, confinement areas, or feedlots, which have livestock densities, that preclude a predominance of desirable forage species, are considered part of a livestock facility. Pasture lands are excluded.

New Livestock Production Facilities - All facilities where animals will be confined and/or manure storage structures that are built at new sites and are not part of another livestock production facility, including a site that is expanding greater than 100 percent of existing production within any three year time period and the resulting number of animal units will exceed 749.

Non-Farm Residence - A residence that is habitable for human occupation and is not affiliated with the specific livestock production system.

Offsite Manure Storage Facility - A manure storage facility constructed at a site that is not adjacent to a livestock production facility.

Pasture Land - Pasture land is land that is primarily used for the production of forage upon which livestock graze. Pasture land is characterized by a pre-dominance of vegetation consisting of desirable forage.

Property Line Setback - Is the distance from the livestock production facility to the property line measured from the facility to the nearest point of the facility owner's property line. If a producer owns land across a road, the road or right of way does not constitute a property line. Local road/property line setbacks apply.

Category 1 Sites: Sites normally acceptable for livestock production facilities.

Category 1 sites are those sites which have been traditionally used for agricultural purposes and are in an area with a relatively low residential housing density. These sites are located where there are five or fewer non-farm residences within ¼ mile from a new livestock production facility with up to 749 animal units, and within ½ mile from a new livestock production facility with 750 animal units or greater. New and expanding livestock production facilities should only be constructed in areas where local zoning allows for agriculture uses.

If the proposed site is within Category 1, it is recognized that this is a site normally acceptable for livestock production facilities. As shown in Table 2, if the proposed site is within Category 1 and has a capacity of 50 to 499 animal units, MDA will review and verify the producer's plans at the producer's request. If the proposed site is within Category 1 and has a capacity of 500 or more animal units, the producer must follow the MDA site selection review and verification process as described in Section V. Category 1 sites with less than 1000 animal units which are able to meet the property line setbacks as listed in Tables 2 and 3, as appropriate, and which meet the other requirements of these GAAMPs, are generally considered as acceptable for Site Selection Verification. An Odor Management Plan (OMP) will not be required for these sites in most circumstances. It is however, recommended that all producers develop and implement an OMP in order to reduce odor concerns for neighboring non-farm residents.

A request to reduce the property line setbacks, as listed in Tables 2 and 3, will require the development of an OMP for verification. All verification requests for Category 1 sites with 1000 animal units or greater will require the development and implementation of an OMP.

Table 2. Category 1 Site Setbacks, Verification and Notification – New Operations

Total Animal Unit	New Operations Non-Farm Residences within Distance	Property Line Setback[1]	MDA Site Review and Verification Process
50-499	0-5 within ¼ mile	250 ft	Upon Producer Request[2]
500-749	0-5 within ¼ mile	400 ft	Yes
750-999	0-5 within ½ mile	400 ft	Yes
1000 or more	0-5 within ½ mile	600 ft	Yes

[1]May be reduced based upon the Odor Management Plan.
[2]To be afforded nuisance protection under the Right to Farm Act, producers must conform to all requirements of the GAAMPs but are not required to complete the site review and verification process if less than 500 animal units.

Table 4. Category 2 Site Setbacks, Verification and Notification – New Operations

Total Animal Units	For new Operations Non-Farm Residences Within Distance	Property Line Setback[1]	MDA Site Review and Verification Process
50-249	6-13 within ¼ mile	250 ft	Upon Producer Request[2]
250-499	6-13 within ¼ mile	300 ft	Yes
500-749	6-13 within ¼ mile	400 ft	Yes
750-999	6-13 within ½ mile	500 ft	Yes
1000 or more	6-13 within ½ mile	600 ft	Yes

[1] May be reduced based upon the Odor Management Plan.
[2] To be afforded nuisance protection under the Right to Farm Act, producers must conform to all applicable GAAMPs but are not required to complete the site review and verification process if less than 250 animal units.

Table 5. Category 2 Site Setbacks, Verification and Notification – Expanding Operations

Total Animal Units	For Expanding Operations Non-Farm Residences within Distance	Property Line Setback[1]	MDA Site Review and Verification Process
50-249	8- 20 within ¼ mile	125 ft	Upon Producer Request[2]
250-499	8- 20 within ¼ mile	200 ft	Yes
500-749	8- 20 within ¼ mile	200 ft	Yes
750-999	8- 20 within ½ mile	250 ft	Yes
1000 or more	8- 20 within ½ mile	300 ft	Yes

[1] May be reduced based upon the Odor Management Plan.
[2] To be afforded nuisance protection under the Right to Farm Act, producers must conform to all applicable GAAMPs but are not required to complete the site review and verification process if less than 250 animal units.

Surface water protection - New and expanding livestock production facilities shall not be constructed within the 100 year flood plain of a stream reach where a community surface water source is located, unless the livestock production facility is located downstream of the surface water intake.

2. High public use areas - Areas of high public use or where a high population density exists, are subject to setbacks to minimize the potential effects of a livestock production facility on the people that use these areas. New livestock production facilities should not be constructed within 1,500 feet of hospitals, churches, licensed commercial elder care facilities, licensed commercial childcare facilities, school buildings, commercial zones, parks, or campgrounds. Existing livestock production facilities may be expanded within 1,500 feet of high public use areas with appropriate MDA review and verification. The review process will include input from the local unit of government and from people who utilize those high public use areas within the 1,500 foot setback.

3. Residential zones - Areas zoned primarily for residential use will generally have housing at a density that necessitates setback distances for livestock production facilities to prevent conflicts. New livestock production facilities shall not be constructed within 1,500 feet of areas zoned for residential use where agriculture uses are excluded. Existing livestock production facilities may be expanded within 1,500 feet of areas zoned for residential use with approval from the local unit of government.

IV. - OFFSITE MANURE STORAGE FACILITIES

Table 6. Site Setbacks, Verification, and Notification – New or Expanding Operations

Storage Surface Area at Operational Volume Elevation, sq. ft.			**Property Line Setback, ft.**	**MDA Site Review and Verification Process**
Liquid Manure		Solid Manure		
Pond-type storage	Fabricated structure-type storage, i.e. reinforced concrete or steel			
≤4,200	≤2,000	≤26,000	250[1]	Upon Producer Request
>4,200	>2,000	>26,000	TBD[2]	Yes

[1]May be reduced based upon the Odor Management Plan.
[2]Distance to be determined based upon the Odor Management Plan.

- Odor Management: Odor management and control is a primary focus relating to the social consideration objectives of these GAAMPs. For new and expanding livestock production facilities, an Odor Management Plan may be required (refer to Category 1 and Category 2 to determine whether an OMP is required for your facility) as part of the Manure Management System Plan for conformance with these GAAMPs. Appendix A includes a detailed outline for development of an effective OMP.
- Manure Storage Facility Plan: Construction plans detailing the design of manure storage components must be submitted to MDA for review and approval. Structures should be designed in accordance with appropriate design standards. Construction plans should include the design standards utilized, design storage volume, size, and layout of the structure, materials specifications, soil conditions in the structure area, site suitability, subsurface investigation, elevations, installation requirements, and appropriate safety features. The plans will be reviewed for conformance with appropriate specifications. Structures should be designed and constructed by competent individuals or companies utilizing generally accepted standards, guidelines, and specifications. (e.g. NRCS, Midwest Plan Service.)

Other items that may accompany the Manure Management System Plan include the following:

- Emergency Action Plan - Through development of an Emergency Action Plan, identify the actions to take and contacts to be made in the event of a spill or discharge.
- Veterinary Waste Management Plan - Identify the processes and procedures used to safely dispose of livestock-related veterinary wastes produced on the farm.
- Conservation Plan - Field-specific plan describing the structural, vegetative, and management measures for the fields where manure and other by-products will be applied.
- Mortality Management Plan - Identify the processes and procedures used to safely dispose of the bodies of dead animals (Bodies of Dead Animals Act, PA 239 of 1994, as amended).

VI. SITE REVIEW AND VERIFICATION PROCESS

The GAAMPs for Site Selection and Odor Control for New and Expanding Livestock Production Facilities are applicable for producers with new and expanding livestock production facilities with a capacity of 50 animal units or greater (see Table 1), who are seeking nuisance protection under the Right to Farm Act. Producers with facilities that require MDA verification in categories 1, 2, or 3 should contact the MDA and begin the site selection review and verification process prior to the construction of new livestock production facilities and expansion of existing livestock production facilities.

further modification. At the request of the producer, a preliminary site visit could be conducted prior to submission of the complete siting request package.

3) Site Suitability Determination:
MDA will determine if the siting request is in conformance with the GAAMPs for Site Selection and Odor Control for New and Expanding Livestock Production Facilities. This determination will be conveyed to the responsible party on MDA letterhead and will be known as "Site Suitability Approval." This approval will also be copied to the local unit of government, and construction must begin within five years from the date of approval by MDA. The start of construction is defined as the physical movement of soil or installation of permanent structures.

4) Construction Plan Submittal and Review:
Design plans for the manure storage structures must be submitted to MDA for review and approval and should be submitted prior to construction. If the plans are found to be in accordance with the required specifications, a letter indicating "Approval of Design Plans" will be sent to the owner. MDA will conduct construction site inspections as needed to determine whether the structures are being built according to the accepted plans. The owner should notify MDA one month prior to beginning the installation of the manure storage facility.

5) Final Inspection:
MDA will conduct a final inspection, preferably, prior to animal population. The completed project must be reviewed by MDA to assure conformance with these GAAMPs. The facility must be completed in conformance with the verification request that has been approved by MDA. Once the facility has been constructed and found in conformance with these GAAMPs, a final verification letter will be sent to the producer. This letter will be copied to the local unit of government.

Site Suitability Approval:
If either the owner of the proposed livestock production facility, any surrounding neighbor within one mile of the proposed facility, or the local unit of government in which the facility is located, disagrees with the site suitability determination, they may request MDA's decision be reviewed by the Michigan Commission of Agriculture within 60 days of the date this determination is issued. The request shall be in writing and include supporting documentation. MDA will review the supporting documentation and then will consult with at least three recognized professionals in the siting and management of livestock production facilities and odor control practices, as listed below, to further evaluate the proposed siting request. MDA will notify the professionals of the request. The professionals shall review and report a recommendation for a response to the requested review, to the Commission of Agriculture, within 60 days of receipt of the written review request. An extension may be granted by the Commission of Agriculture. Upon receipt and review of the professional's recommendation, the Commission of Agriculture will recommend to the Director of the Michigan Department of Agriculture whether to affirm or re-evaluate the site suitability determination. The final

APPENDIX A

MICHIGAN ODOR MANAGEMENT PLAN

The goal of an effective Odor Management Plan is to identify opportunities and propose practices and actions to reduce the frequency, intensity, duration, and offensiveness of odors that neighbors may experience, in such a way that tends to minimize impact on neighbors and create a positive attitude toward the farm. Because of the subjective nature of human responses to certain odors, recommending appropriate technology and management practices is not an exact science.

An Odor Management Plan shall include these six basic components:

1. Identification of potential sources of significant odors.
2. Evaluation of the potential magnitude of each odor source.
3. Application and evaluation of Michigan Odor from Feedlot Setback Estimation Tool (OFFSET – Michigan Odor Print September 2000 version, available on www.michigan.gov/mda.)
4. Identification of current, planned, and potential odor control practices.
5. A plan to monitor odor impacts and respond to odor complaints.
6. A strategy to develop and maintain good neighbor and community relations.

Note that items 1, 2, and 4 of the Odor Management Plan components may be addressed in tabular format as demonstrated in the example Odor Management Plan (Appendix B).

Component Details:

1. Identify and describe all potential significant sources of odor associated with the farm. Odor sources may include:

    - Animal housing
    - Manure and wastewater storage and treatment facilities
    - Feed storage and management
    - Manure transfer and agitation
    - Land application areas

2. Evaluate the magnitude of each odor source in relation to potential impact on neighbors and other community members.

Odor magnitude is a factor of both the type and size of the source.

Michigan OFFSET is one means of estimating odor source magnitudes and potential impacts from animal production facilities. Use the Michigan OFFSET odor emission values to rank each potential odor source on your farm. Note that some odor sources are not considered in this tool.

facilities, thus broadening the potential area within which livestock production facilities may be appropriately sited. Odor reduction technologies continue to evolve. Current technologies include, but are not limited to, vent bio-filters, manure storage covers, and composting.

Each technology presents different challenges and opportunities. These should be considered during the planning process for a new or expanding animal livestock facility.

5. Describe the plan to track odor impact and the response to odor concerns as they arise.

   - Outline how significant odor events will be recognized and tracked including potential impact on neighbors and others. For example, one could record odor events noticed by those working on and/or cooperating with the farm. If odor is noticeable to you, your family, or employees, then it is likely noticeable to others.
   - Explain how odor complaint will be addressed.
   - Indicate the point at which additional odor control measures will be pursued.

6. Identify the strategy to be implemented to establish and maintain a working relationship with neighbors and community members.

Elements of a community relations plan may include:

- Conducting farming practices that result in peak odor generation at times that will be least problematic for neighbors.
- Notifying neighbors of when there will be an increase in odors.
- Hosting an annual neighborhood farm tour to provide information about your farm operation.
- Sending a regular farm newsletter to potentially affected community members.
- Keeping the farmstead esthetically pleasing.
- Supporting community events and causes.

Odor Tracking and Response

Tracking of odor concerns includes two approaches:

1. All farm employees and some routine farm service providers will be asked to report noticeable offensive odor events as they come and go from the farm and travel the community.

2. The intent is to establish and maintain an effective, open line of communication with immediate neighbors so that they too will be comfortable reporting odor events to example dairy.

3. Response to odor complaints or events reported by neighbors will include investigation of the primary odor incident source on the farm. For example, is it associated with storage agitation, field application, or no specific farm activity? The farm will report back to the person reporting the odor event within 24 hours, or as soon as possible thereafter. Included in the response will be the reason for the odor event, an acknowledgement of the concern, steps – if any – to be taken to prevent it in the future, and a thank you for bringing it to the farm's attention.

   If a pattern is identified among odor event complaints by neighbors, an outside observer, such as MSU Extension or MDA, will be asked to provide an objective analysis of the situation. If the concern is confirmed to be legitimate by a second objective observer, actions will be taken to further control odor per, or comparable to, odor management practices identified in the Odor Management Plan.

Community Relations

In order to develop and maintain a positive relationship with the entire community, the following steps are planned:

1. Keeping the farmstead area esthetically pleasing will continue to be a high priority.
2. Each spring, a farm newsletter will be sent to all appropriate community members describing farm activities, personnel, and management.
3. A community picnic and farm tour will be held at least semi-annually for all in the immediate community and manure application areas.
4. Example Dairy Farm will make itself available to local schools for farm visits as field trips or school projects as appropriate.
5. We will seek to participate in local community events and youth activities, such as the local town festival and youth athletic teams.
6. Additional opportunities to strengthen community relations will be considered whenever they arise.

(The above list of community relations practices may be longer than most farms find necessary, but it provides several examples that farms might consider.)

Odor Management Practices

Odor Source	Odor Management Practices & Reduction Factor		
	Current	**Planned**	**Potential**
Large Manure Storage	1. Approximately eight months of potential storage results in agitation being required only 2-3 times per year. 2. The natural plant fiber in the manure results in a crusting of the manure. (OCF = 0.5)		
Freestall Barns		1. Plans include the planting of a tree shelterbelt the length of the freestall barns, parlor, and treatment area.	
Milking Center Wastewater	1. Fills from bottom 2. Long term storage facilitates minimal disturbance of only about two times per year.		3. Impermeable synthetic cover (OCF = 0.1)
Run Off Storage	1. Long-term storage, disturbed only 1-2 times per year		
Outside Lots			1. Lot could be reduced in size.
Settling Basins	1. Cleaned out frequently, about every ten days, minimizing anaerobic production of odors.	2. Plans include the planting of tree shelterbelt between the basins and the road/property line.	
Bedded Barns			
Open Lot Manure Storage	1. Storage is emptied frequently so that anaerobic activity is limited. 2. Storage crusts (OCF = 0.5)		
Agitation			
Land Application	1. Manure is injected or incorporated whenever field conditions permit. 2. Weekend and holiday application is avoided.		
Silage & Feed Storage	1. Silage piles are covered with plastic with clean water diverted off of the pile. 2. Forages harvested at recommended moisture. 3. Concrete pad is mechanically swept at least once per week.		

WHO NEEDS A CNMP?

1. A livestock farm of any size that desires third party verification in the MDA's Michigan Agriculture Environmental Assurance Program (MAEAP) Livestock System verification.

2. Some livestock production facilities receiving technical and/or financial assistance through USDA-NRCS Farm Bill program contracts.

3. A livestock production facility that a) applies for coverage with the MDEQ's National Pollutant Discharge Elimination System (NPDES) permit, or b) is directed by MDEQ on a case by case basis.

For additional information regarding the permit, go to: www.michigan.gov/deq
For additional information regarding MAEAP, go to: www.maeap.org or telephone (517) 373-9797.

VII. REFERENCES

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